CASE REPORT

Adding context to a simulation module for leadership and management baccalaureate nursing students

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Abstract

An advanced simulation module was developed and implemented in a baccalaureate nursing management course to demonstrate how learned leadership and management concepts and client care skills can be applied by senior nursing students within the context of an acute care setting. This simulation extended the learning experience beyond the case analysis approach to include a total health care environment with simultaneous evolving dynamics that impinged upon the students' direct care activities.

The simulated situations included an opportunity for students to participate in hand-off communication, assign providers according to client needs and competencies, apply delegation guidelines, access the chain of command when needed, apply legal-ethical principles, communicate within an interprofessional team, and provide care for a group of clients with diverse health conditions. The faculty contends that this simulation has the potential to contribute to the creation of graduates that are better prepared to enter complex work environments with leadership skills as an essential core competency. It is further believed that students are more likely to value the need for leadership skills in their future role as a member of the health care team as a result of using simulation in a leadership and management course.

Key words

Simulation in nursing, Leadership and management concepts, Multiple patient scenarios

Introduction

Nursing graduates are entering professional practice environments that are increasingly complex. Leadership skills have become an essential competency for effective practice in the future [1]. While only a percentage of nursing graduates will go on to assume managerial titles, all nurses must become leaders in the profession. Traditionally, students enrolled in leadership and management practicums are in health care environments under the supervision of faculty or a nurse preceptor. This provides the student an opportunity to learn a broader set of system and organizational skills. However, the learning experience of independence and accountability within the complexities of health care environments may not be obtainable for the student given the risks of inexperienced decision making.

Simulation provides students with a safe environment in which to become fully immersed and participatory in the application of learned concepts. Simulation in nursing education is described as a teaching methodology that involves

degrees of fidelity from noncomputerized methods to the use of highly computerized human patient simulator manne-quins [2]. Schiavenato challenges the more recent proliferation of high fidelity simulation as the central application which defines simulation as a teaching methodology [3]. A broader conceptualization of simulation is needed in order for it to achieve its full potential as a means to represent nursing processes as well as skill based actions [3].

Contextual learning, derived from constructionist theory may provide a broader simulation model where methodologies include placing students in situations where knowledge is applied and shaped through their experiences [4]. The standardized processes of the International Nursing Association for Clinical Simulation and Learning model are consistent with this constructivist epistemology through the use of debriefing reflection and evaluation to enhance theoretical knowledge. To create this broader field for application of theoretical knowledge through simulation, an environment depicting the realities of a complex healthcare setting or the context within which care is provided is needed.

The authors of this simulation developed a comprehensive simulation strategy incorporating three levels of simulation within the contextual environment of a complex healthcare situation which required the application of skills and multiple nursing processes. The clinical milieu was simulated by having students attend a corporate level healthcare meeting prior to beginning direct care activities. The corporate officer concluded by dismissing students to assume direct care for a group of simultaneously occurring client simulations. Students then experienced sequentially deployed planned events which converged upon the direct care activities.

Review of the literature

Simulation has widely been used by anesthesiologists, aviation and nuclear power industries to achieve quality outcomes during unexpected events [5, 6]. Simulation in nursing has historically been used for the demonstration and validation of psychomotor skills [7]. Simulation facilitates the acquisition of skills that may not be available to students during their clinical experiences [8]. More recent literature supports the use of simulation to develop valuable skills which characterize leadership abilities and processes.

Placing learners in complex simulation scenarios which foster interpersonal interaction and cooperation promotes the development of leadership qualities including collaboration, communication, and delegation [9]. Gerardi and Fontaine suggested that simulation allows students the ability to share information openly, engage in conflict and negotiate results [10]. Simulation strategies which require participants to assume the role of other healthcare disciplines provides the opportunity to develop greater understanding of the contributions of other providers. Moreover, interprofessional team simulations have supported improved performance in the management of emergent situations as well as improvement in leadership skills and the ability to interact with others [11, 12].

Wagner et al also reported that after experiencing simulation, students demonstrated an increase in self-confidence during patient interactions and when performing psychomotor skills [13]. Students' perception of communication with the client and significant others, prioritization, decision making, and clinical judgment also improved after simulated learning experiences [8, 14-16]. Improvement in student use of critical thinking skills has also been reported in the literature [17-19].

In the last decades, increased emphasis on patient safety and quality by regulatory agencies has led to curricular revisions in nursing education programs. While concepts are applicable at all levels of education, often safety and quality concepts are incorporated in leadership and management level courses. Simulation methods have shown student improvement in self-rated quality and safety competencies [20, 21]. However, researchers concluded that traditional teaching methods may better provide the content of safety and quality learning while simulation better provides for the context [21].

Scope of practice concepts are typically taught in classroom settings with little opportunity to practice and apply knowledge given that students do not supervise others in practicum settings. A collaborative project among faculty representatives from three education programs provided an opportunity for Registered Nurse and Licensed Practical

Nursing students to apply state delegation guidelines within a simulated multi-client environment [22]. Faculty-developed evaluation rubrics reflected team performance related to scope of practice, delegation, supervision, teamwork, prioritize-ation of care, and communication. Students were also individually evaluated on critical behaviors expected for the educational level. Faculty concluded that the positive results of this project supported continuation of the simulation scenarios.

Caring for groups of clients can be a struggle for students and novice nurses. Kaplan and Ura developed a multiple client simulation experience to provide students the experience of caring for group of clients and practicing the leadership skills of prioritization and delegation [15]. Students cared for three clients with differing acuities and resulting needs. An example of the scripted complexities of care included the intentional omission of client information during the simulated shift report. Evaluative measures included student surveys and performance during the scenario. When the simulation was completed, students reported more confidence in the ability to prioritize and delegate care for multiple patients [15].

The use of simulation to develop leadership skills was demonstrated by its use as an orientation tool for novice managers. Radovich et al stated that although nurse managers may feel adept at managing day to day clinical activities, they feel unprepared to manage personnel communication in complex situations [23]. The use of simulation helped novice managers develop transformational leadership skills including interpersonal communication, active listening, crisis management, creative interactive, and negotiation skills in a safe environment. It also provided a standardized method for managers to obtain management skills necessary to ensure a healthy work environment and increase patient safety [23].

Implementing the module

An advanced simulation module was developed and implemented in a baccalaureate nursing management course to demonstrate how learned leadership and management concepts and client care skills can be applied by senior nursing students within the context of an acute care setting. This simulation extended the learning experience beyond the case analysis approach to include a total health care environment with simultaneous evolving dynamics that impinged upon the students' direct care activities. Given the simulation's complexity, the faculty felt that students would not be ready to manage such dynamics before their final semester. The faculty's philosophy is consistent with the ideology that clinical simulation should build on prior knowledge and mimic real world situations as well as provide a safe environment for students to apply theoretical concepts [8, 14, 24].

International Nursing Association for Clinical Simulation and Learning Standards of Best Practice for Simulation guided the development of the simulated clinical experience [25]. Extensive planning and preparation were necessary to execute this complex simulation. Faculty met for several months to develop the case scenarios to be managed, environmental conditions, resource tools, student roles and expectations, the progression of the scenario and an evaluation tool. In addition, a pre-simulation assignment, focused questions for peer reviewers and debriefing questions were also developed to support the objectives of the course and simulation experience.

The simulated situations included an opportunity for students to participate in hand-off communication, assign providers according to client needs and competencies, apply delegation guidelines, access the chain of command when needed, apply legal-ethical principles, communicate within an interprofessional team, and provide care for clients with diverse health conditions. Faculty enhanced existing scenarios previously used in the program by adding additional roles and dynamics to promote critical thinking and advanced decision-making. Four simultaneous client scenarios were planned using 3G Sim-man™ mannequins, one child mannequin, and one live standardized client. The case scenarios included an unstable medical-surgical client, a stable post-operative client, a stable pediatric client, and a newly admitted client with a history of Alzheimer's disease in need of surgery. Additionally, faculty scripted interruptions and "unplanned" events to occur as the scenarios unfolded. All of the "unplanned" events were staged to converge upon the direct care activities.

Hard copy charts were created for each client in the scenario that included a face sheet with demographic information, a patient history, medication administration records, physician orders, nurses' notes for documentation, laboratory and radiology results, electrocardiogram reports and surgical consents. In addition to client charts, students were also given access to supplies they would need to meet the needs of their patients. These supplies included various medications, indwelling catheter insertion kits, starter kits for intravenous lines, syringes, needles, and dressings.

Organizational tools and planning grids were developed to facilitate the simulation's order and success. Working with large groups of students in any clinical scenario requires the event be well organized and include adequate faculty support. Modules for this simulation were developed to accommodate 20 to 24 participants at a time. Planning grids organized the arrangement of rooms in the simulation lab, necessary props and supplies, student assignments, faculty volunteers and needed technology (see Table 1). Another grid was used to provide a thorough description of the roles for students, volunteers and faculty including scripts, moulage and costumes (see Table 2).

Table 1. Scenario supplies and room needs

Room	Scenario/Activities	Supplies	Students/Faculty
109	Patient #1 - Mr. Hodges – Post ORIF x 2 days →PE (Sim-Man #2)	High Fidelity Sim-Man Cardiac monitor w/ BP cuff Gown Bandages for hip IV & Fluids TED hose O2 nasal cannula Venti-mask Non-rebreather mask Indwelling Catheter Tissues with blood Medication for injection	FM #1/ Mrs. Hodges AM – B. W. PM – M. P.
113	Patient #2 - Mrs. Taylor – Post-TAH x 1 day (Sim-Man #1)	Sim-Man Gown Wig IV & Fluids Indwelling catheter Underwear Clean pads Pad with blood Opioid Saline lock Empty syringes	FM #2/Mrs. Taylor's mother AM – S.H. PM – B. Z.
118	Vital-Sim #3 David Jones – Pedi Scenario	Sim-Man Gown Infiltrated IV site New IV dressing Perineal pads Baseball cap Underwear Electrolyte replacement IV fluids Snack New IV start kit	FM #3/Becky Jones AM – S. M. PM – A. T.

Table 2. Simulation roles for faculty, students and volunteers

	Role	Student Actor/Faculty	Description of Role	Room
1	**Family Member #1** Mr. Hodges's Wife Attire: Street clothes, older woman	AM – B. W. PM – M. P.	Mr. Hodges & his wife have been married for 64 years and she "does not know how to live without him". She was certain he wouldn't live through surgery, but now that he has she is only slightly relieved. She is suspicious of the healthcare system. She cries at times and is having a difficult time comprehending what the nurse is trying to explain because she is so upset. She is alone at the hospital waiting for her sons to arrive.	109
2	**Family Member #2** Mrs. Taylor's Mother Attire: Street clothes, older woman	AM – S.H. PM – B. Z.	This mother is very close to her daughter and wants to protect her. She is paying close attention to her the care her daughter is receiving: she is afraid that her pain is not being managed and that she may be bleeding too much. She is also upset that Mrs. Taylor's husband has not been to the hospital to see his wife today.	113
3	**Family Member #3** Becky Jones (Mother) Attire: Street clothes	AM – S. M. PM – A. T	Becky has completed one semester in nursing school and is a very vigilant caregiver. David is her only son she is very protective. Her son has shown only a little improvement since he was admitted yesterday. Becky is somewhat irritated that no one checked David's IV site during the last shift - he complained to the night nurse and no one has changed it.	118

Additional planning requirements surrounded the creation of the context of the healthcare environment. A total of twelve rooms were needed to implement the simulation including client care areas, a simulated nurses' station and break room, rooms for peer review, a supply room, two control rooms to manipulate mannequins, a large room for debriefing students and an auditorium style room for the Town Hall Meeting. Resource tools included a Charge Nurse Reference book which contained the unit staffing matrix plan, nurse competencies inventory, a unit description with admission criteria and other references. In addition, a PowerPoint™ presentation was created to provide students an organizational view of the simulated setting and provide the chief executive officer with talking points as to the type of hospital the students would be working in, the expectations of administration, updated hospital performance metrics, and issues presently facing the organization. Multiple faculty members were utilized in various capacities to execute this simulation. Faculty were needed to manipulate the high-fidelity mannequins, serve as actors, record video and serve as a facilitator to oversee the simulation. Faculty also led the prebriefing session, orientation to the simulation environment and debriefing.

After planning and staging for the simulation were complete, students arrived prepared to discuss questions assigned in their pre-simulation exercise. The pre-simulation assignment and class discussion focused on objectives related to the course and simulation experience. The assignment and discussion were conducted to ensure students were knowledgeable of topics related to the scenarios and could successfully achieve scenario objectives. The discussion focused on: (a) topics related to the patient situations that students would be expected to care for; (b) applicable management principles including decision-making, conflict resolution, and effective hand-off communication and (c) various legal and ethical principles. Students also signed a written agreement committing to maintain professional integrity within a safe and confidential learning environment.

Once the discussion concluded, students were assigned to their respective roles and oriented to the high-fidelity simulator capabilities and the simulated hospital environment. Students assigned the roles of nursing staff, student nurses, and nurse manager were given scripts that identified their character's name, educational background, and level of experience. Family members and the nurse's aide received additional coaching on their roles which included creating conflict and distractions.

Peer reviewers were assigned to observe the client care scenarios from remote conference rooms with live video streaming capabilities.

Organizational context was created by having students begin their work day attending a forum with a simulated chief executive officer, portrayed by one of the faculty, conducting a Town Hall Meeting. In this component of the scenario, students were provided an opportunity to experience transparency and the public accountability of health care systems. The PowerPoint™ presentation created by the faculty provided the chief executive with talking points for the meeting. It also served to introduce students to an organizational initiative which was the simulated pilot unit created to relieve increases in client census. This was done to add credence to the high hours of nursing care and thus high number of student participants providing care in the simulated unit.

After the Town Hall Meeting, the scenario continued with shift-report from the off-going nurse to a group of four staff nurses, a certified nurse's aide, and a charge nurse. The staff was given information about each client on the unit, new physician orders, and any issues the night shift felt were pressing. To add realism to the scenario, the report given by the off-going nurse intentionally did not provide all of the information needed to care for this group of clients. The charge nurse and nursing staff were provided Charge Nurse Book reference tools to make assignments based knowledge of each nurse's level of education and experience and a staffing matrix. After assignments were made, the nurses and nurse's aide dispersed to begin their shift. The nurse manager was expected to lead the unit according to a self-identified leadership style. One student was assigned the role of a student nurse enrolled in a leadership and management course completing a preceptorship with the nurse manager.

As the staff nurses and the charge nurse begin to review client charts and perform physical assessments, multiple distractions and complications began to unfold in order to mimic a realistic acute care setting. In addition to safely coordinating care for multiple clients, the following activities ensued for the students to manage:

- a surgical consent needed to be obtained for the confused client with Alzheimer's disease;
- the nurse's aide offered to remove an indwelling catheter and insert an intravenous line for the client who needed surgery;
- a difficult physician called the unit to request client information and give orders;
- an inappropriate admission was sent into the unit via wheel chair;
- the unstable medical-surgical client continued to decline and needed to be transferred to a higher level of care;
- a possible medication error was discovered by a staff nurse and needed to be reconciled.

The simulation continued until each client's needs were met, physician orders were implemented, all contextual issues were resolved, and/or the simulation time-limit was reached (45 minute maximum). Once the scenario was over, the students reassembled to debrief and review the video recordings of the simulation experience. All students were given an opportunity to provide input during debriefing by answering open-ended questions asked by the facilitator as well as recognize strengths of the nursing staff and areas of improvement. The debriefing session also aimed to enhance the learning of all students; identify best practices; promote safe, quality patient care; and promote self-confidence in the students.

Outcomes and discussion

Debriefing concluded with an evaluation of the simulated clinical experience by the students. Each student was asked to provide feedback on a scale of 1 to 5 about items such as the realism of the scenario and how well the simulation met objectives of the course. Students were also able to provide comments at the end of the evaluation tool about anything else

they would like faculty to know that they may have been unable or unwilling to share in debriefing related to the simulation. Student feedback has assisted faculty make revisions to the clinical scenarios including changes to the prebriefing and debriefing processes, the environmental conditions, props, and student roles.

Themes that emerged from the student evaluations included that students felt the experience was realistic, improved their ability to delegate, helped to identify their deficits, improved their ability to work in a team and reinforced leadership and management concepts. Several students commented that "this was harder than expected".

The faculty's primary focus was to provide a formative assessment of students where constructive feedback would be given to improve areas such as communication, conflict resolution, delegation, priority setting, clinical reasoning, and psychomotor skills. Faculty assessed each group's performance on how well they applied leadership and management concepts in a complex health environment as a team, rather than provide a summative evaluation with an assigned grade to individual students. The desired outcome was for all students to meet the objectives of the simulation and deliver high quality and safe nursing care while using good clinical judgment. Faculty concluded that students not only met the objectives of the simulation, but met additional course objectives and baccalaureate degree student learning outcomes of the nursing program.

While the availability of high fidelity mannequins was essential to this learning situation, the conceptualization of the module extended beyond the technology. The technologic advances in human-patient simulators provide learning opportunities for students to apply skills and knowledge to provide direct care in a controlled manner and under safe conditions. However, technology has yet to simulate the context within which the care takes place. In order for the context to be authentic, experiences within a simulated environment need to provide the opportunity for decision making and resulting outcomes. The environmental realities can be authentication through consultations with care providers and direct observations of the environment to be simulated. A broad contextual vision is necessary for students to recognize the impact the health care environment has on direct client care. By gaining an understanding of the health care environment, students are more likely to value the need for leadership skills.

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